

REMARKS

Favorable reconsideration of this application is respectfully requested in light of the following remarks. Currently, claims 1-3, 7-9, and 12 are pending in the application.

The present invention is directed to a resistor apparatus of the type which is prone to breakage upon becoming overheated. Such a resistor apparatus includes a resistor body 36 that includes a core 34 disposed within a gas impermeable insulative layer 32. Separate lead lines 40, 40 are attached to the core.

During operation, current travels into and out of the resistor core 34 through the first and second lead lines 40, respectively. When a large current is applied to the resistor core 34, the resistor body 36 becomes extremely hot. As different components of the resistor body 36 tend to thermally expand at different rates, thermal shock results. Also, rapid heating causes different areas of the resistor to be heated and thermally expand at different rates, thereby also producing the thermal shock. Further, water, moisture or organic matter present in the overheated resistor is heated and produces gas. Gas trapped inside the insulating layer 32 builds up pressure. The thermal shock and heated gases break apart the resistor body 36, thereby propelling gas and broken parts of the resistor body 36. The broken parts can damage surrounding apparatus.

The presently claimed invention relates to the provision of a flexible, gas permeable containment casing formed of a woven material in which there is enclosed a resistor body formed of a core enclosed within a gas impermeable insulation layer. The casing has sufficient tensile strength and temperature resistance to contain the broken parts while permitting the escape of the propelled gas to prevent pressure build-up within the casing. Independent Claim 1 defines these features. None of the art of record disclose these patentable features.

Claims 1-2, 7-9 and 12 have been rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,043,838 to *Sakich*. Claims 1-3 and 7-8 stand rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,656,555 to *Raudabaugh* or in the alternative under 35 USC §103(a) as being obvious over *Raudabaugh* in view of U.S. Patent No. 2,079,369 to *Bradley*. Claim 3 stands rejected under 35 USC §103(a) as being unpatentable over *Sakich* in view of U.S. Patent No. 2,808,292 to *Yohe* or *Raudabaugh*.

Sakich pertains to polymer housed electrical assemblies which are formed as modules and which can be selectively coupled together to vary the overall electrical rating of the device. These devices are used as surge protectors. In order for a surge arrester to function properly, intimate contact must be maintained between the block containing silicon carbide and the block containing metal oxide varistors. As shown in Figure 2, cylindrical electrical components 60 and 62 represent the silicon carbide and metal oxide varistors. The electrical components 60 and 62 are aligned in a row and are in electrical connection with one another through their axially directed ends and under an axially-directed compressive force developed by a nonconductive filament winding 64. A plastic film barrier 110 laterally surrounds the electrical components 60 and 62 and is interposed coaxially between the electrical components and filament winding 64. The plastic film barrier acts to seal the electrical components from the epoxy or resin on the filament forming the winding. A watershed housing 58 receives the electrical assemblies therein via a slight interference fit. The above noted structure protects the connection between the silicon carbide and the metal oxide varistors.

Sakich does not pertain to the resistor apparatus as described in the present application. In particular, *Sakich* does not disclose a first lead wire being electrically attached to a first end of the resistor core and the second lead wire being electrically attached to a

second end of the resistor core. In contrast, there are two electrical bodies 60 and 62 that are separate and distinct, wherein a lead wire is attached to one of the ends of each of the electrical components. In addition, *Sakich* does not make mention of a resistor body comprising a resistor core enclosed within a gas impermeable insulative layer. As described in the present application, an insulating layer normally surrounds the core, but is not necessary for the operation of a leaded resistor. See paragraph [0002] of the present application.

Finally, *Sakich* fails to disclose a flexible gas permeable substantially tubular containment casing formed of a woven material and substantially enclosing the resistor body and having sufficient tensile strength and temperature resistant to contain broken pieces of an overheated resistor body while permitting the escape of gas thereby avoiding substantial pressure build-up within the casing. In contrast, an additional structure, i.e., the watershed housing 58, is needed to perform the recited function, not the filament winding 64, which the Examiner equates to the claimed flexible gas permeable substantially tubular containment casing. There is no evidence that the winding 64 has sufficient tensile strength and temperature resistance to contain broken pieces of the overheated resistor body. Accordingly, *Sakich* fails to disclose patentable features of the independent Claim 1.

Similarly, *Raudabaugh* fails to disclose the patentable features of the present invention. In particular, *Raudabaugh* discloses a filament wrapped electrical assembly similar to that disclosed in *Sakich*. Like the disclosure in *Sakich*, two separate electrical components are lined in a row which are wrapped in a filament wrapping. *Raudabaugh* fails to disclose the same features as identified above with respect to *Sakich*. That is, *Raudabaugh* fails to disclose a first lead wire being electrically attached to a first end of the resistor core and the second lead wire being electrically attached to a second end of the resistor core. In

addition, *Raudabaugh* does not make mention of a resistor body comprising a resistor core enclosed within a gas impermeable insulative layer.

In addition, *Raudabaugh* fails to disclose a flexible gas permeable substantially tubular containment casing formed of a woven material. As shown in Figure 1, the filament winding 14 disclosed therein is not a substantially tubular containment casing as defined in independent Claim 1. Accordingly, *Raudabaugh* fails to disclose patentable features of independent Claim 1.

For at least the foregoing reasons, it is submitted that the resistor apparatus of independent Claim 1, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that she should be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required,


including any required extension of time fees, or credit any overpayment to Deposit

Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR
EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

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